$$\frac{3x+1}{2x-4} > 0$$

1) mult by $2x-4$

if $2x-4>0$ $\times 72$

$3x+1 > 0$

$x \geq -\frac{1}{3}$

but

$x > 2$

$\Rightarrow x > 2$

if $2x-4<0$

$3x+1 < 0$

$$\frac{3x+1}{2x-4} > 0$$

Sign Charts

num = 0

denom = 0

create a sign chart *

(req $\neq$ side = 0)

$x(x-3)(x+1) = x^3 - 2x^2 - 3x < 0$

$-x(x^2-2x-3) < 0$

x^2-2x-3

$(x-3)(x+1)$

$x < 0$

$x-3<0 \quad x+1<0$

$x<3 \quad x<-1$

$x \leq -1$

$x(x^2-2x-3) > 0$

$x-3>0 \quad x+1>0 \quad x>0$

$x>3 \quad x>-1$

$x>3$

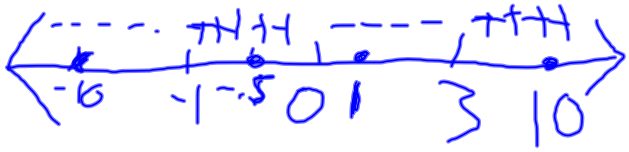
$x<-1$ or $x>3$

$$x^3 - 2x^2 - 3x < 0$$

$$x(x+1)(x-3) < 0$$

$x = 0$ $x + 1 = 0$ $x - 3 = 0$

$x = -1$ $x = 3$



$(-\infty, -1)$

$(0, 3)$

2.3/15 The average of 2 real numbers is 41.375 and their product is 1668. What are they?

* x, y
* $\frac{x+y}{2} = 41.375 = 41\frac{3}{8}$
* $xy = 1668$

$x = \frac{1668}{y}$

$\Rightarrow \frac{\frac{1668}{y} + y}{2} = 41.375$

$x + y = 2(41.375)$

$x + y = 82.75$

$x = 82.75 - y$

$(82.75 - y)(y) = 1668$

$82.75y - y^2 = 1668$

$y^2 - 82.75y + 1668 = 0$

$y = \frac{82.75 \pm \sqrt{82.75^2 - 4(1)(1668)}}{2(1)}$

$= \frac{82.75 \pm \sqrt{175.5625}}{2}$

$= \frac{82.75 \pm 13.25}{2}$

$\frac{82.75 + 13.25}{2} = 48$

$\frac{82.75 - 13.25}{2} = 34.75$

Precalc 2011-02-07 3.1, 2.3, 2.4 sorts of things

2.3/9) $550 invested ⇒ 11% return

what part of $1100 invested at 12%

& how much at 6%

so that the return on $1650 is 9%

Q: x: amount inv. @ 12%

y: amount inv @ 6%

* $x+y=1100 \Rightarrow y=1100-x$

* $(1650)(.09)=(550)(.11)+(x)(.12)+(y)(.06)$

* $(1650)(.09)=60.5+.12x+(1100-x)(.06)$

23/2.4) Joan weighs 120 lbs. Her actual weight is 5% from her "ideal" weight. What are the possible values of her ideal weight.

x 120 y

$120 - x = .05x$

$120 = 1.05x$

$\frac{120}{1.05} = x$

$= 114.29$

$(.05)y = y - 120$

$-.05y \quad -.05y$

$120 = .95y$

$126.31 = \frac{120}{.95} = y$

Precalc 2011-02-07 3.1, 2.3, 2.4 sorts of things

Precalc 2011-02-07 3.1, 2.3, 2.4 sorts of things

Precalc 2011-02-07 3.1, 2.3, 2.4 sorts of things